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## **A new household ant record for Turkish Thrace [*Monomorium pharaonis* (L.)] (Hymenoptera, Formicidae)**

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**A b s t r a c t :** In this study, *Monomorium pharaonis* (L.), known as Pharaoh ant, is given as a new record from Turkish Thrace. This species, distributing as cosmopolitan, is recorded for the first time by FOREL 1911 from İzmir in Turkey. Also known from Balkans, Pharaoh ant is found in Edirne and Uzunköprü. Pharaoh ant, causing serious health problem and vectoring some pathogenic bacteria mechanically in hospitals, are described and its diagnostic features are given.

**K e y w o r d s :** Formicidae, *Monomorium pharaonis*, household ants, Turkish Thrace, Turkey.

### **Introduction**

In general ant species make their nests in the soil, under stones, in decayed trees, under tree bark and in branches. However houses -providing food, water, heat- are suitable places for them. Among household ants *Monomorium pharaonis* (Pharaoh ant) is one of the world's best known, most widely distributed and most successful tramp-species (BOLTON 1987).

The Pharaoh ant workers are monomorphic and 1.4-2.0mm length, yellowish brown. It was described originally as *Formica pharaonis* by LINNAEUS 1758 from Egypt. Later MAYR 1862 combined this species in *Monomorium* genus.

The Pharaoh ant's origin is uncertain. Although Pharaoh ant is thought to have originated from South America (ARNOLD 1916) or Tropical Africa (BERNARD 1952), the idea that it originated from India and spread all over the world through international trade is predominant (EMERY 1922, WILSON & TAYLOR 1967, BOLTON 1987).

While in temperate zone their most likely nest localization is indoors (SMITH 1965), it may be dump areas where the warmness is always maintained, in tropic zones outdoors is also a nest localization (KOHN & VLČEK 1986).

Being a tropical species the Pharaoh ant needs high humidity and temperature to survive (PEACOCK & BAXTER 1950, PEACOCK et al. 1955). Therefore they establish their nests in the houses where they find suitable humidity and temperature. Bakeries, groceries, fabrics, office buildings, apartments, prisons, schools and hospitals are some of possible nest sites for them.

A well developed colony consists of several hundreds of queen, 50,000-100,000 workers and male produced periodically. Queens lay eggs steadily all year.

Despite invasive ants quite common all of the world, most of the studies are done in continental America. Nevertheless these ants are known to be great pest potential for the other regions of the world (EDWARDS & SHORT 1990, REIMER et al. 1990). Although there is no any comprehensive study about household ants in Palaearctic region, especially some *Monomorium*, *Solenopsis*, *Crematogaster*, *Tetramorium*, *Tapinoma*, *Camponotus* species are known to have entered houses in Turkey (KIRAN & AKTAÇ unpublished data). Only one record, belonging *Monomorium pharaonis*, has been given from Anatolia İzmir – from the hotel he stayed – by FOREL 1911 up to now. No other record has been given about household ants from Turkey since.

In this study; Pharaoh ant, recorded previously from İzmir with only worker caste, was given for the first time with queens and workers from Turkish Thrace. Since the queens were collected from Turkey for the first time, detailed descriptions and drawings were given for both castes. Also, Pharaoh ant was evaluated taxonomically, geographically and ecologically.

### Material and methods

Study materials were collected from indoors in centre of Edirne province and Uzunköprü district (Fig. 1) between 2001-2006. Respiratory tubes were used in collecting the materials and they were fixed in 70 % ethanol and prepared as dry materials for examination.

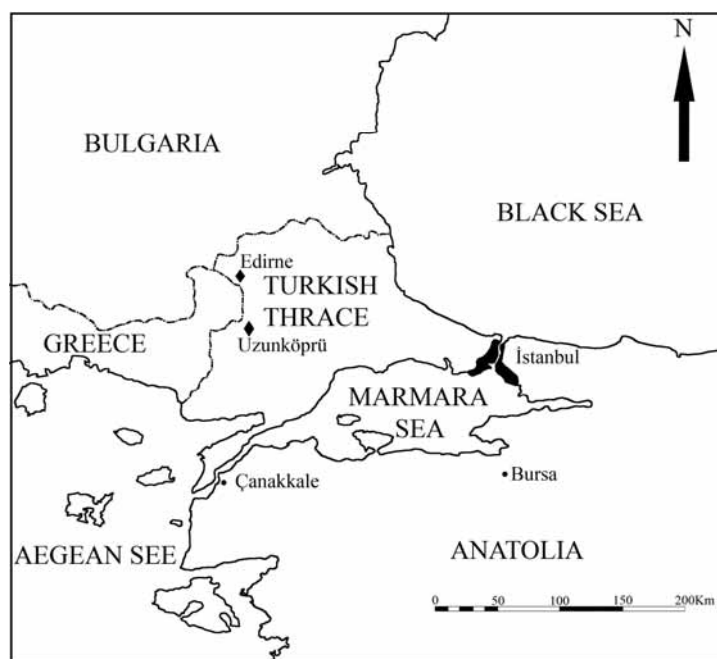


Fig. 1: Map showing the sampling sites; ♦ represents the ones in Turkish Thrace.

Research materials are deposited in Trakya University Faculty of Arts and Sciences Department of Biology.

## Results

**Material examined:** **Edirne** (N41° 40', E26° 33', 40m), 01.01.2001-16.12.2003, 215 workers: 5 storey, reinforced concrete apartment, with garden, near highway, materials were collected from the kitchen and the bathroom on the second floor, the nest was inside the kitchen wall; 27.02.2004, 2 queens, 215 workers, 5 storey, reinforced concrete apartment, with garden, near highway, materials were collected in the sitting room on the 5<sup>th</sup> floor, the nest wasn't found; 14-26.01.2004, 350 workers, 5 storey, reinforced concrete apartment, with garden, near highway, materials were collected in the kitchen and the bedroom on the first floor, nest wasn't found; **Edirne-Uzunköprü** (N41° 16' E26° 41', 18m), 25.04.2006, 29 workers, 4 storey, reinforced concrete apartment, without garden, near highway, materials were collected in the kitchen on the 3<sup>rd</sup> floor, nest wasn't found.

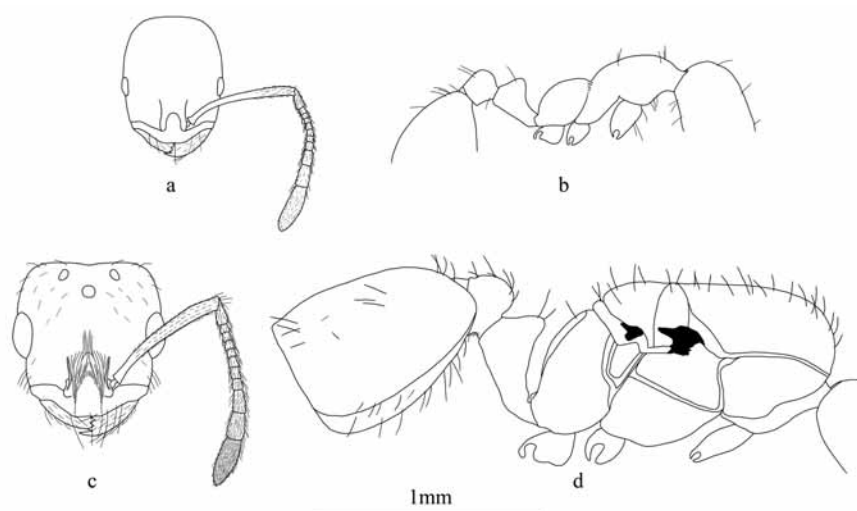
### *Monomorium pharaonis* (LINNAEUS 1758)

*Formica pharaonis* LINNAEUS 1758 - Syst. nat. (Ed. 10) 1: 580pp.

**Worker:** Head longer than broad, sides oval, occipital border slightly convex, distinctly punctuated and matt. Clypeus in median part quite rose and bicarinate, smooth, punctuated towards the sides, anterior margin indistinctly notched. Mandibles narrow, with 4-5 teeth and striated longitudinally. Eyes small, oval, about 20-25 ommatidia. Scapus smooth, decumbent hair, hardly surpassing the occipital margin. Antennae twelve-segmented with a 3 segmented club, first funiculus segment elongated, 4 times longer than broad, second segment quadrate, the other funicular segments until club gradually increased length, 8<sup>th</sup> funicular segment 1,5 times longer than broad (Fig. 2a). Promesonotum not rose, without promesonotal groove, mesonotal groove quite wide and deep, propodeum without spin. Thorax densely punctuated. Ventral surface of petiole shaft with small projection. Petiole thin, in profile node of petiole's anterior part concave, dorsal and posterior part convex. Anterior and dorsal part of postpetiole convex, posterior part concave. Nodes densely punctuated. Gaster smooth and shiny, after half of the first gaster tergite dark brown. All body with sparse hair, except antennae without pubescence, yellowish brown and matt (Fig. 2b).

**Queen:** Head little longer than broad, sides less oval than worker, almost quadrate, occipital border edged distinctly. Entire head densely punctuated and matt like worker. Eyes big, oval about 200 ommatidia, 3 ocelli, environs of the ocelli blackish. Frontal area and frontal triangle striated longitudinally. Clypeus rose, bicarinate, sculpture like worker, anterior margin almost flat. Mandibles like worker, with 4-5 teeth, striated longitudinally, masticator border darker. Scapus dense and decumbent hair, hardly surpassing occipital margin, funicular segments like worker (Fig. 2c). Dorso-median line of scutum, posterior half of scutellum and entire mesonotum patched darkly. Scutum and prescutum at the same level without depression. Propodeum with a distinct groove for the shaft of the petiole's location, without spin. Entire thorax densely punctuated. Shaft of petiole without projection. In profile node of petiole narrower than worker's, anterior part concave, posterior part convex. Node of postpetiole rounded. Nodes densely punctuated and matt. Gaster smooth and shiny, after the first quarter of the gaster tergite dark brown. Hair like worker. All body yellowish brown and matt (Fig. 2d).

Both castes show no differences with nominate species.



**Fig. 2:** *Monomorium pharaonis* (LINNAEUS 1758). Worker: (a) Head (Frontal view), (b) Thorax, petiole, postpetiole (in profile); queen: (c) Head (Frontal view), (d) Thorax, petiole, postpetiole (in profile).

### Discussion

*Monomorium pharaonis*, the Pharaoh ant, one of the most common pest ant in the world (WHEELER, 1910), is a synanthropic species (closely associated with human), making its nest inside of the building and its populations are difficult to control (EDWARDS 1991). The first records indicating that this species has house infesting propensity were given by BOSTOCK (1858) and JERDON (1851). During the 170 years after them the reports about the pest of this species have increasingly published.

Although the origin of the Pharaoh ant, distributing as cosmopolitan, is disputable, the idea of distribution that they spread all over the world via trade ships is highly predominant. Except tropical regions making its nest inside of the house increase their pest status.

During our examination we learned that Edirne population was first seen in 2000 and existed especially in kitchens and bathrooms, Uzunköprü population was first seen in 1999 and increased in population and infested neighbour apartment. Although pesticides have been used since than, no success has been obtained. Exploration in infected house showed that Pharaoh ant workers exist especially near food and water sources like kitchen, bathroom, nests are found in a small wall crevice under kitchen cupboard.

Only one record of Pharaoh ant, distributing all of the World, was given by FOREL 1911 from a hotel in İzmir. The distribution of this species from Balkans in Greece (MENOZZI 1928) and Bulgaria (ATANASOV & DLUSSKY 1992) is also known. When we consider known distribution of Pharaoh ant, existing in Turkish Thrace is an expected result. However, it is possible to see them in other cities, especially, having custom gate and ports for international trade. As a result of the studies which will be carried out in such

kind of cities, the exact distribution of Pharaoh ant in Turkey can be determined and the control methods can be studied over.

### Zusammenfassung

Die Art *Monomorium pharaonis* (L.), die als Firavun's Ameise bekannt ist, wurde erst in dieser Arbeit im Trazien der Türkei nachgewiesen. *M. pharaonis* (L.) wurde in der Türkei in Izmir erst von FOREL, 1911 festgestellt, die eine kosmopolit Verbreitung hat. Sie war im Balkan bekannt, die durch dieser Arbeit im Zentrum of Edirne und Uzunkopru festgestellt war. *M. pharaonis* (L.) verbreitet als mechanisch einige pathologische Bakterie, die insbesondere Gesundheit probleme verursachen. Die Art wurde beschrieben und seine diagnostische Eigenschaften in der Arbeit gegeben.

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